REMARKS

Reconsideration is requested.

A revised PTO 1449 Form is attached. Return of an initialed copy of same is requested, pursuant to MPEP § 609. While a fee is not believed to be required to confirm the Examiner's consideration of the previously-filed documents, the Office is authorized to charge the undersigned's Deposit Account No. 14-1140 for any required fee. The presently filed and previously submitted transmittal letters include such authorizations.

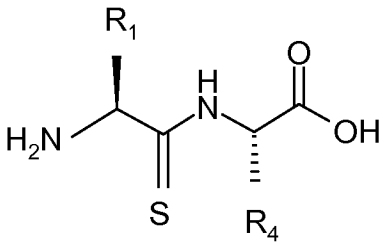
The Examiner's expansion of the search beyond the elected species is noted, with appreciation. The Examiner is requested however to specifically indicate the scope of the search and examination for the record.

The specification has been revised, without prejudice. The amendment to the specification obviates the objection to same and withdrawal of the objection is requested. No new matter has been added.

The Examiner's restatement of the guidelines for arrangement of a patent specification is appreciated. The specification has been revised to include a legend relating to the figures. No new matter has been added. The Examiner is requested to advise the applicants in a future communication of any requirements relating to the arrangement of the specification which may require further amendments and/or consideration.

Claims 1, 2, 4, 5, 7-9, 11, 25-27, 30 and 33-39 have been canceled, without prejudice. Claims 42-46 have been added. Support for the amendments can be found throughout the specification. The applicants submit that no new matter has been added. Claims 3, 6, 10, 12-24, 28, 29, 31, 32 and 40-46 are pending.

Claim 28 describes a drug conjugate comprising a drug molecule covalently bonded to R_4 of a thiodipeptide where the thiodipeptide has the formula:



The application describes, for example, thiodipeptides having this formula at, for example, page 7 line 8 to page 9 line 25. R_1 and R_4 are described at page 7 lines 12-14 and 20-25, page 8 line 13 to page 10 line 17. R_4 is described as having a functional group on page 7 lines 26-27. Page 7 line 30, page 9 lines 27-31 and page 13 line 29 to page 14 line 11 indicates that R_4 is adapted to be attached to a drug molecule by covalent bonding. Claim 6 refers to "the" C-terminal residue. Claim 10 describes "carboxylic acid", which is described, for example, at page 13 lines 19-20. Claim 10 also refers to the functional group "of R_4", for consistency with claim 28. In claim 17, the language "side chain group" has been deleted, without prejudice. Claim 24 above describes hydrogen and methyl. Claim 29 refers to covalent attachment of the drug molecule to the thiodipeptide, for consistency. Claim 31 refers to the thiodipeptide for

antecedent basis support. Claim 40 refers to the drug molecule, for consistency. Also claim 40 describes an antibiotic, and CNS has been further described. Claim 42 describes that the N-terminal residue of the thiodipeptide is an L-isomer - which is described, for example, on page 17 lines 19-21, and page 12 lines 18-28. Claim 43 describes that the C-terminal residue of the thiodipeptide is an L-isomer - which is described, for example, on page 17 lines 19-21, and page 12 lines 18-28. Claim 44 describes that the N- and C- terminal residues of the thiodipeptide are L-isomers - which is described, for example, on page 17 lines 19-21.

Claim 45 describes a drug conjugate comprising a drug molecule covalently bonded to a thiodipeptide, the thiodipeptide having an N-terminal and a C-terminal residue, wherein the thiodipeptide comprises a carboxylic acid group at the C-terminal and wherein the drug molecule is attached as a side chain of the C-terminal residue. In claim 45, the drug molecule is indicated to be attached to the C-terminal residue of a thiodipeptide having only two residues (one N-terminal and one C-terminal residue). There is a carboxylic acid at the C-terminal and the drug is attached as a side chain of the C-terminal residue, i.e. at the Carbon between the C-terminal carboxylic acid group and the Nitrogen of the thiodipeptide bond. Original claims 1, 28 and 30 in combination, for example, describe the arrangement of claim 45. Original claim 30 refers to attachment at residue 1 or 2. Page 4 lines 32-33 describes that the "second" residue is the C-terminal residue.

Claim 46 describes a drug conjugate molecule that is a product of the reaction of an R_4 functional group of the thiodipeptide with a drug molecule. The definition of R_4

and R_1 corresponds with claim 28. This claim provides an alternative definition of the drug conjugate of claim 28.

The objection to claim 40 is obviated by the above amendments. Withdrawal of the objection is requested.

To the extent not made moot by the above, the Section 112, second paragraph, rejection of claims 2-5, 7, 25, 27-32 and 40 is obviated by the above amendments. Withdrawal of the rejection is requested.

Claim 28 describes that the drug conjugate comprises a thiodipeptide having the formula recited in claim 28 which is covalently bonded to a drug molecule at a functional group of R_4. The drug molecule is part of the conjugate and that a single drug molecule is attached to the thiodipeptide. The position of attachment of the drug is indicated and the structure of the thiodipeptide is defined.

Dependent claim 29 defines that covalent attachment of the drug molecule to the thiodipeptide is by means of an ester, ether or amide linkage. The drug molecule referred to is the same as that in claim 28. Claim 32 is consistent with claim 28 and is submitted to be definite with regard to the nature of the drug molecule of claim 28. Claim 40 is consistent with claim 28.

The claims are submitted to be definite.

To the extent not made moot by the above, the Section 112, first paragraph "written description", rejection of claims 2-5, 7, 25, 27-32 and 40 is obviated by the above amendments. have been rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Reconsideration and

withdrawal of the rejection are requested in view of the above and the following comments.

One of ordinary skill in the art will appreciate that the application provides an adequate written description to, for example, identify the claimed genus and a significant structure-function correlation for the claimed genus. The application, particularly the Examples, also describes a sufficient number of representative species encompassed by the claimed genus including a teaching, for example, as to what part of the structure of the thiodipeptide can be varied while retaining the ability to act as a drug carrier. One of ordinary skill will appreciate that the applicants were in possession of the claimed invention at the time the application was filed. Consideration of the following in response to the Examiner's comments is requested:

(1) Level of skill and knowledge in the art/predictability in the art

The claimed genus describes a thiodipeptide having the formula recited in claim 28. This thiodipeptide is capable of variation at two positions: R_1 and R_4.

The application describes a range of groups that may be present at the R_1 position and provides experimental data across this range (see e.g. Figure 6A).

The application also describes a range of groups (including drug molecules) that may be present at the R_4 position and provides experimental data across this range (see e.g. Figure 6A-I).

As such, the claimed subject matter finds support, for example, in the description of groups that may be present at the R_1 and R_4 positions and with the experimental results provided in the application.

(2) Scope of the invention/Partial structure/disclosure of drawings

The claims define a structural core of the drug conjugate. The Examiner's comments on page 10, final paragraph, of the Office Action dated November 24, 2009 with regard to Figures 1 and 6 providing a "backbone core" for the thiodipeptide are noted.

This backbone core was extensively tested, as reported in the Examples and Figures. Not only were a range of groups tested at the R_1 and R_4 positions but a wide range of drug molecules were also tested, e.g. see Figure 6.

As such, variability in the claimed genus is supported by the description and Examples which provide a representative number of species for the genus.

(3) Physical and/or chemical properties and (4) Functional characteristics

As discussed above, the claims define a core structure, for which common attributes are provided in the application (particularly in the Examples and Figures). The application teaches a core structure having the sequence $H_2N–CHR_1–CS–NH–CHR_4–COOH$ and a representative number of species are described, both structurally and functionally, in the application as filed.

(5) Method of making the claimed invention/actual reduction to practice

The Examiner is understood to acknowledge that the specification (page 25) describes the making of conjugate compounds and that Figures 1 and 6 show specific conjugates. These conjugates are representative of the claimed genus and a specific correlation between structure and function is provided for the genus in the application as

filed. One of ordinary skill will appreciate that the applicants were in possession of the claimed invention at the time the application was filed.

Withdrawal of the Section 112, first paragraph "written description", rejection is requested.

The Section 102 rejection of claims 2-5, 7, 25 and 27-32 over Brillon et al (WO 91/01976) is traversed. Reconsideration and withdrawal of the rejection are requested in view of the above and the following distinguishing comments.

The Examiner refers to 4-thiothymopentin in the cited art. 4-thiothymopentin is not a thiodipeptide and Brillon et al does not disclose a drug conjugate comprising a drug molecule covalently bound to a thiodipeptide having the formula recited in the pending claims. The cited art is not believed to teach each and every aspect of the claimed invention. Withdrawal of the Section 102 rejection is requested.

The Section 102 rejection of claims 2-5, 7, 25, 27-32 and 40 over Wilner et al (U.S. Patent No. 5,606,017) is traversed. Reconsideration and withdrawal of the rejection are requested in view of the above and the following distinguishing comments.

The claims (claim 28) require the point of attachment of the drug to the backbone of the carrier compound to be the carbon intermediate the nitrogen of the thiopeptide bond and C-terminal carbon of the second residue. Wilner et al does not anticipate claim 28 and claims dependent therefrom requiring same.

The Examiner has also noted that Wilner et al does not concern a thiopeptide of the claims but a thioether. Wilner et al fails to describe the claimed invention.

The Examiner is also understood to note that the constructs of Wilner et al lack a C-terminal carboxylic acid group, which is a feature of claim 28.

The claims are patentable over Wilner et al and withdrawal of the Section 102 rejection based on same is requested.

For completeness, the applicants provide the following comments with regard to the "related art" cited by the Examiner on page 17 of the Office Action dated November 24, 2009.

Huber et al (U.S. Patent No. 5,662,911) describes benzodiazepine conjugates that do not share the thiodipeptide backbone structure of the claims. Hubbell et al (U.S. Patent Application Publication No. 2003/0220245) refers to thiol peptide conjugates on page 40, ¶[00406], which are not thiodipeptides having the core structure recited in the claims but involve a single amino acid (Y) or peptide (XXXXY) to which the drug is attached by an amide bond (XXXXY-drug). Thiol is then incorporated at the opposite end of the molecule (SH-XXXXY-drug) to allow coupling to a material.

The claims are submitted to be in condition for allowance and a Notice to that effect is requested. The Examiner is requested to contact the undersigned, preferably by telephone, in the event anything further is required.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: /B. J. Sadoff/
B. J. Sadoff
Reg. No. 36,663

BJS:pp
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100